

Title High carbon dioxide atmospheres affect stored 'Thompson Seedless' table grapes.
Authors Crisosto, C. H., Garner, D. and Crisosto, G.
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Abstract

Efficacy of controlled atmosphere (CA) conditions for decay control in 'Thompson Seedless' table grapes was evaluated during the 1998-2000 seasons. During the 1998 season, early (16.5% soluble solids concentration=SSC) and late harvested (19% SSC) grapes were exposed to 5%, 10%, 15%, 20%, or 25% CO₂ combined with 3%, 6%, and 12% O₂. In 1999 and 2000, 10% or 15% CO₂ combined with 3%, 6%, or 12% O₂ were used. In all trials, fruit were initially SO₂ fumigated and air-stored grapes were used as controls. Storage atmospheres did not affect SSC, titratable acidity (TA), or sugar-to-acid ratio (SSC:TA). The main storage limitations for early harvested 'Thompson Seedless' table grapes were "off flavor" and rachis and berry browning development, which resulted from exposure to >10% CO₂. However, more than or equal to 15% CO₂ was needed to control total decay and nesting development independent of O₂ concentrations. High carbon dioxide atmospheres (15% to 25%) were more effective in decay control without detrimental effects on quality when late harvested grapes were used. The combination of 15% CO₂ with 3%, 6%, or 12% O₂ is suggested for up to 3 months storage only for late harvested 'Thompson Seedless' table grapes; it should not be used for early harvested grapes.